DOCUMENT RESUME

ED 182 917 EC 123 090

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TITLE Kingston Math Analysis Test. A Criterion Referenced Test for Basic Math Skills Through Fractions.
INSTITUTION Arthritis Center of Hawaii, Honolulu.
PUB DATE [77]
NOTE 20p.: For project final report, teaching manuals, and other tests, see EC 123 081-091. Best copy available.
AVAILABLE FROM School District No. 148, Mainlining Adequacy Project, Grace, ID 83241 (Query source for price)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Addition; *Arithmetic; *Basic Skills; *Criterion Referenced Tests; Decimal Fractions; Division; *Elementary Education; Fractions; Multiplication; Subtraction

ABSTRACT

The document presents a criterion referenced test of basic math skills, including division, multiplication, addition, subtraction, fractions, decimals, time, and measurement. (DLS)

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ED182917

Kingston Math Analysis Test

by

Neldon Kingston

A Criterion Referenced Test

For Basic Math Skills

Through Fractions

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EC123090

1 = No Problems
2 = Some Problems
3 = Severe Problems

Name

Date	
More & Less	
+Facts	
+Process	
+Carrying	Page 1
+Carrying with 0	
+Column	
-Facts	
- Process	
- zeros	
- borrowing	
- borrowing with 0	
x Facts	
x process 2 digit	
x process 2 digit	
x carrying	Page 2
x zeros	
÷ facts	
÷ Process 1 div.	
÷ process 1 div.	
÷ borrowing	
÷ 0 placeholder	
÷ zero	
÷ remainder	
÷ to)	
frac. + process C.D.	
frac. + pro. w/o C.D.	
Com. Den. by x	Page 3
+ mixed numbers	
+ frac. column	
- frac. process C.D.	
- frac. pro. w/o C.D.	
- mixed numbers	
Frac. horizontal	
Frac. vertical	

1 = no problems
2 = some problems
3 = severe problems

Name	Date	frac. x process	frac. x not + in x	frac. ÷ process	page 3 cont'd: mixed nos. x & ÷	reduce frac.	frac. cross reduce	/ vs. — frac. line	decimal place value	decimals = %	+ decimals	- decimals	2 dec. pl. from 1	x decimals	decimal structure	÷ dec. move .)	÷ dec.).	frac. to dec.	frac. & dec.	$ facts	$ process	$ decimal	page 4: lb. oz. facts	lb. oz. process	lb. oz. borrow	hr. min. facts	hr. min. process	hr. min. borrow	yd. ins. facts	yd. in. process	yd. in. borrow

Name_____ Date_____

(1) Which is more 9 or 5 ? (circle)

(2) 4 + 5

(3) 6 + 3

(4) 2 + 7

(5) 12 + 5

(6) 24 + 13

(7) 51 + 36

(8) 307 + 220

(9) 18 + 7

(10) 67 + 55

(11) 349 + 362

(12) 408 + 905

(13) 3 1 + 4

(14) 6 8 + 3

(15) 62 94 + 29

(16) 1 1 + 1

(17) 6 - 2

(18) 7 - 4

(19) 9 - 3

(20) 12 - 3

(21) 17 - 5

(22) 56 - 44

(23) 978 - 755

(24) 83 - 5

(25) 765 - 187

(26) 808 - 250

(27) 3050 - 1046

(28) 5000 - 2721

Name_____ Date_____

(29) 6×7 (30) 7×8 (31) 8×9 (32) 12×5 (33) 47×9

(34) 321×3 (35) 894×6 (36) 57×37 (37) 106×20 (38) 700×63

(39) 394×475 (40) $7\overline{)63}$ (41) $3\overline{)27}$ (42) $8\overline{)64}$

(43) $5\overline{)40}$ (44) $5\overline{)10}$ (45) $6\overline{)264}$ (46) $9\overline{)7236}$

(47) $3\overline{)9054}$ (48) $14\overline{)434}$ (49) $20\overline{)506}$ (50) $17\overline{)679}$

(51) Write $5 \div 3$ in this form. $\overline{)\quad}$

Name_____ Date_____

(52) $\frac{1}{5} + \frac{3}{5}$

(53) $\frac{1}{4} + \frac{1}{4} =$

(54) 1/8 + 3/16 =

(55) $\frac{1}{5} \frac{4}{5} + \frac{2}{5}$

(56) 1/6 + 2/5 + 1/3

(57) 1/8 + 3/5 + 1/3

(58) 6 3/4 + 3/4

(59) 3/5 - 1/5

(60) 6/8 - 2/8

(61) 7/8 - 5/16 =

(62) 3 - 2/5 =

(63) 7/8 x 2/8

(64) 2/5 x 1/4

(65) 3/8 x 5/8 =

(66) 3 1/5 x 4 2/5 =

(67) 1/3 ÷ 2/3 =

(68) 3 1/4 ÷ 2 3/4 =

(69) $\frac{1}{2})\frac{1}{4}$

(70) .731 = (a) ones (b) tenths (c) hundredths (d) thousandths

(71) .59 = _____%

(72) 76.12 + 97.78

(73) 76.92 - 33.87

(74) 7.5 - 2.36

(75) 3.69 x 89.1

(76) Add: 35.6, 8.58, 40 =

(77) Subtract: 8 - .4 =

Name_____ Date_____

(78) $.8\overline{)168}$ (79) $.7\overline{)49.77}$ (80) $4\overline{)24.8}$ (81) $9\overline{).459}$

(82) 1/3 = .____ (83) 3/6 = .____ (84) 1/8 = .____

(85) $\frac{1}{2}$ + .4 (86) 2/5 - .1 (87) .3 x 3/4 = (88) .2 ÷ 4/5 =

(89) $1 = _____¢ (90) 1 lb. = _____ oz. (91) 1 hr. = _____ min.

(92) 1 yd. = _____ ft. (93) 1 ft. = _____ inches.

(94) 5 hr. 36 min.
- 1 hr. 50 min.

(95) 6 lbs. 4 oz.
- 3 lbs. 9 oz.

(96) 7 yds. 2 ft. 3 in.
- 2 yds. 2 ft. 8 in.

(97) $16.27
- $ 9.63

KEY

(1) Which is more (9) or 5 ? (circle)

(2) $\begin{array}{r} 4 \\ +\,5 \\ \hline 9 \end{array}$ (3) $\begin{array}{r} 6 \\ +\,3 \\ \hline 9 \end{array}$ (4) $\begin{array}{r} 2 \\ +\,7 \\ \hline 9 \end{array}$ (5) $\begin{array}{r} 12 \\ +\,5 \\ \hline 17 \end{array}$ (6) $\begin{array}{r} 24 \\ +\,13 \\ \hline 37 \end{array}$

(7) $\begin{array}{r} 51 \\ +\,36 \\ \hline 87 \end{array}$ (8) $\begin{array}{r} 307 \\ +\,220 \\ \hline 527 \end{array}$ (9) $\begin{array}{r} 18 \\ +\,7 \\ \hline 25 \end{array}$ (10) $\begin{array}{r} 67 \\ +\,55 \\ \hline 122 \end{array}$ (11) $\begin{array}{r} 349 \\ +\,362 \\ \hline 711 \end{array}$

(12) $\begin{array}{r} 408 \\ +\,905 \\ \hline 1313 \end{array}$ (13) $\begin{array}{r} 3 \\ 1 \\ +\,4 \\ \hline 8 \end{array}$ (14) $\begin{array}{r} 6 \\ 8 \\ +\,3 \\ \hline 17 \end{array}$ (15) $\begin{array}{r} 62 \\ 94 \\ +\,29 \\ \hline 185 \end{array}$ (16) $\begin{array}{r} 1 \\ 1 \\ +\,1 \\ \hline 3 \end{array}$

(17) $\begin{array}{r} 6 \\ -\,2 \\ \hline 4 \end{array}$ (18) $\begin{array}{r} 7 \\ -\,4 \\ \hline 3 \end{array}$ (19) $\begin{array}{r} 9 \\ -\,3 \\ \hline 6 \end{array}$ (20) $\begin{array}{r} 12 \\ -\,3 \\ \hline 9 \end{array}$ (21) $\begin{array}{r} 17 \\ -\,5 \\ \hline 12 \end{array}$

(22) $\begin{array}{r} 56 \\ -\,44 \\ \hline 12 \end{array}$ (23) $\begin{array}{r} 978 \\ -\,755 \\ \hline 223 \end{array}$ (24) $\begin{array}{r} 83 \\ -\,5 \\ \hline 78 \end{array}$ (25) $\begin{array}{r} 765 \\ -\,187 \\ \hline 578 \end{array}$ (26) $\begin{array}{r} 808 \\ -\,250 \\ \hline 558 \end{array}$

(27) $\begin{array}{r} 3050 \\ -\,1046 \\ \hline 2004 \end{array}$ (28) $\begin{array}{r} 5000 \\ -\,2721 \\ \hline 2279 \end{array}$

Key

(29) $6 \times 7 = 42$

(30) $7 \times 8 = 56$

(31) $8 \times 9 = 72$

(32) $12 \times 5 = 60$

(33) $47 \times 9 = 423$

(34) $321 \times 3 = 963$

(35) $894 \times 6 = 5364$

(36) $57 \times 37 = 399 + 171 = 2109$

(37) $106 \times 20 = 000 + 212 = 2120$

(38) $700 \times 63 = 2100 + 4200 = 44100$

(39) $394 \times 475 = 1970 + 2758 + 1576 = 187150$

(40) $7\overline{)63}$ 9, 63, 0

(41) $3\overline{)27}$ 9, 27, 0

(42) $8\overline{)64}$ 8, 64, 0

(43) $5\overline{)40}$ 8, 40, 0

(44) $5\overline{)10}$ 2, 10, 0

(45) $6\overline{)264}$ 44, 24, 24, 0

(46) $9\overline{)7236}$ 804, 72, 03, 0, 36, 36, 0

(47) $3\overline{)9054}$ 3018, 9, 00, 05, 3, 24, 24, 0

(48) $14\overline{)434}$ 31, 42, 14, 14, 0

(49) $20\overline{)506}$ 25 R 6 or 3/10 or .3, 40, 106, 100, 6

(50) $17\overline{)679}$ 39 R 16 or 16/17 or .94, 51, 169, 153, 16

(51) Write $5 \div 3$ in this form. $3\overline{)5}$

KEY

(52) $\frac{1}{5} + \frac{3}{5} = \frac{4}{5}$

(53) $\frac{1}{4} + \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

(54) 1/8 + 3/16 =
2/16 + 3/16 = 5/16

(55) $\frac{1}{5} + \frac{4}{5} + \frac{2}{5} = \frac{7}{5}$ or $1\frac{2}{5}$

(56) 1/6 = 5/30
2/5 = 12/30
+ 1/3 = 10/30
27/30
9/10

(57) 1/8 = 15/120
3/5 = 72/120
+ 1/3 = 40/120
127/120
1 7/120

(58) 6 3/4
+ 3/4
6 6/4
7 1/2

(59) 3/5
- 1/5
2/5

(60) 6/8
- 2/8
4/8
1/2

(61) 7/8 - 5/16 =
14/16 - 5/16 = 9/16

(62) 3 - 2/5 =
3 = 2 5/5
- 2/5
2 3/5

(63) 7/8
x 2/8
7/8 x 2/8 = 14/64
7/32

(64) 2/5
x 1/4
2/5 x 1/4 = 2/20
1/10

(65) 3/8 x 5/8 = 15/64

(66) 3 1/5 x 4 2/5 =
16/5 x 22/5 = 352/25
14 2/25

(67) 1/3 ÷ 2/3 =
1/3 x 3/2 = 3/6 = 1/2

(68) 3 1/4 ÷ 2 3/4 =
13/4 x 4/11 = 52/44 = 1 8/44
1 2/11

(69) $\frac{1}{2}\overline{)\frac{1}{4}}$
2/1 x 1/4 =
2/4
1/2

(70) .731 = (a) ones
(b) tenths
(c) hundredths
(d) thousandths

(71) .59 = 59 %

(72) 76.12
+ 97.78
173.90

(73) 76.92
- 33.87
43.05

(74) 7.50
- 2.36
5.14

(75) 3.69
x 89.1
369
3321
2952
328.779

(76) Add: 35.6, 8.58, 40 =

35.6
8.58
+ 40.
84.18

(77) Subtract: 8 - .4 =

8.0
- .4
7.6

KEY

(78) $.8\overline{)168}$ = 210.

$$\begin{array}{r} 16 \\ \hline 08 \\ 8 \\ \hline 0 \end{array}$$

(79) $.7\overline{)49.77}$ = 71.1

$$\begin{array}{r} 49 \\ \hline 07 \\ 7 \\ \hline 07 \\ 7 \\ \hline 0 \end{array}$$

(80) $4\overline{)24.8}$ = 6.2

$$\begin{array}{r} 24 \\ \hline 08 \\ 8 \\ \hline 0 \end{array}$$

(81) $9\overline{).459}$ = .051

$$\begin{array}{r} 0 \\ \hline 45 \\ 45 \\ \hline 09 \\ 9 \\ \hline 0 \end{array}$$

(82) 1/3 = .33

(83) 3/6 = .50

(84) 1/8 = .125

(85) $\frac{1}{2} = \frac{5}{10}$

$+ .4 = \frac{4}{10}$

$\frac{9}{10}$

or .9

(86) $\frac{2}{5} = \frac{4}{10}$

$- .1 = \frac{1}{10}$

$\frac{5}{10} = \frac{1}{2}$

or .5

(87) $.3 \times 3/4 =$

$\frac{3}{10} \times \frac{3}{4} = \frac{9}{40}$

or .225

(88) $.2 \div 4/5 =$

$\frac{2}{10} \times \frac{5}{4} = \frac{10}{40} = \frac{1}{4}$ or .25

(89) \$1 = 100 ¢

(90) 1 lb. = 16 oz.

(91) 1 hr. = 60 min.

(92) 1 yd. = 3 ft.

(93) 1 ft. = 12 inches.

(94) 5 hr. 36 min.
- 1 hr. 50 min.
3 hr. 46 min.

(95) 6 lbs. 4 oz.
- 3 lbs. 9 oz.
2 lbs. 11 oz.

(96) 7 yds. 2 ft. 3 in.
- 2 yds. 2 ft. 8 in.
4 yds. 2 ft. 7 in.

(97) \$16.27
- \$ 9.63
\$ 6.64

Math Criterion Reference Instructions

Directions:

No help is to be given the child with any problems to any degree. The only help which is allowable is in case a number is not clear because of reproduction difficulties, unless specifically allowed in section B below. Children are to be told if they do not understand or do not know how to do it, to circle the problem. Each sheet may be given independently, if needed, to match more closely with the grade level being tested. i.e. The first grade could be given only sheet 1 and have explained that there will be some problems that they haven't learned how to do yet and they should circle these and not worry about them. A careful watch should be made for students counting out math facts and either their name written down or an identifying, non-threatening mark such as a star placed on their paper. If a mark is to be used, state in advance that you will be walking around putting marks on some people's paper but not to worry about it. Do not explain why the mark is being put on the paper. Make note of counting separately for pages 1 and 2, as different processes are involved. It has proved impractical to note this closer than by page in large group and a few monitor situations, such as generally are present in classroom testing situations. It has been our experience that there is a tendency to miss students who are counting so watch for subtle signs (i.e. head nodding or pencil dotting). If desired the testing time can be recorded for each pupil, as extremely fast or slow times may be significant in diagnosis. The average classroom, using all these sheets, will generally require about 40 minutes to test. NOTE: A child is to be given as long as he needs to complete the test. This test does not have a time limit. If some pupils are taking extremely long "thinking" periods on particular items, an announcement may be politely made to the group that if you have to spend a lot of time thinking about a problem, they probably don't know how to do it and should circle it. Make sure

the pupil puts his name and the date on the test. If more than one page is used, it is only necessary to do it on the first page. Tell students to do all their work on the test paper.

Section B - Allowable Help

Page 1:

The more or less item may be read if needed with the pupil just circling the answer.

Page 2:

The item measuring the relationship of $\div$ to $)\overline{\quad}$ may have an explanation given that they are to rewrite the problem using the division brackets ($)\overline{\quad}$). Care should be given not to prompt the relationship i.e. a sample problem should not be done nor any type of explanation about the process. If they still don't know, tell them to circle the problem.

Page 3:

Students may be told to make sure they don't overlook any problems as the problems are somewhat scattered. The written out terms may be told a student if he asks, as it is a test of math understanding not reading ability. Abbreviations, however, should not be explained, i.e. a person cannot be told that oz. means ounces or that yd. means yard.

PROFILING THE C. R. MATH TEST

In profiling the test, the test profile has been made as sequential as possible. However, some jumping around in the test is necessary as some items must, of necessity, involve more than one concept. To disregard one type of error because one had already passed it in the profile would, to a degree, defeat the purpose of the test. The only other alternative would be to greatly increase the number of each type of problem. To do this becomes bulky very rapidly when each item is given a process analysis as is required in this type of testing.

In scoring the test and recording on the profile it has been found helpful to use a graduated scale of:

1 = no problems - this means no errors were made regarding the respective concept.

2 = some problems - this would indicate that the student made only 1 or 2 errors or missed on 1 aspect of a multi-aspect concept (if there was only 1 example of the concept and a student missed it, it would be recorded as a 3. The same for 2 examples and both wrong).

3 = severe problems - should be recorded if there are 3 or more errors made in the concept or if there are only 1 or 2 examples and they are missed.

NOTE: It does not pay to be kind or generous in scoring a criterion referenced test. A student's remedial needs must be well understood if he is to be helped. If one says the student knows it on the test and he doesn't, it may never be found out an error has been made. But, if one says he doesn't know it on the test and then starts to work with the student it will soon be found out an error has been made. Problems that are wrong should be analyzed to determine what is wrong and the error is then scored as an error under the proper concept. For example, a long division problem could be missed

for several reasons among which are the long division process, multiplication fact, subtraction fact or borrowing. Just because it is a long division problem that is missed doesn't mean that it is necessarily recorded as an error under the long division process. For example, if the problem were missed because of an error in borrowing it would not be counted against long division but would be counted against borrowing. If the problem was missed because of a multiplication fact it would be counted against the multiplication facts not against long division. If the error was in the long division process it would be counted against the long division process.

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